

SUPPORTING STRUCTURE FOR A CUPBOARD OR SHELF SYSTEM

Description:

The present invention relates to a supporting structure for a cupboard or shelf system
5 with a supporting rod positioned between two joints.

With the supporting structure under discussion, which is known, e.g., from EP 0 787
907, a maximum of six supporting rods can be interconnected at right angles to each
other at one joint, thereby enabling the configuration of many different spacial designs
of a cupboard or shelf system. To this end, the supporting rods, which are usually
10 formed by hollow profiles, can also be provided with exterior grooves for receiving a
rectangular sheet to be used as a base, a cover, or a side panel.

A disadvantage of the known supporting structures is the absence of suitable structural
elements for pivotable shutters or doors, which would also enable a cupboard closed
off with doors or individual compartments closed off with shutters to be formed in a
15 shelf system.

Based on this technical background, the object of the present invention is to provide a
supporting structure for a cupboard or shelf system that also enables easy installation
of shutters or doors.

To solve this technical problem, in the case of a supporting structure for a cupboard or
20 shelf system with a supporting rod positioned between two joints according to Claim 1,
the objective is for the supporting rod to include at least one tab capable of being
pivoted around an axis parallel to the longitudinal axis of the supporting rod, it being
possible to attach a shutter or doors to the tab such that they are pivotable relative to
the supporting rod.

25 For small shutters, it may be sufficient to provide a single tab with a correspondingly
wide configuration. Preferably, however, two tabs are regularly provided, and even
more if large doors or shutters are used and they must be capable of holding the weight

of relatively large doors or shutters.

In a preferred structural embodiment, it is provided that a hinge with the tab connects two supporting rod sections. As a result of this measure, supporting rod sections already present in a modular system of the supporting structure according to the present invention can be utilized. This eliminates the need for specially-designed supporting rods with at least one pivotable tab and allows the modular system to be kept very universal overall with relatively few components.

In a further structural embodiment it is provided that the hinge has an axial, central threaded hole, thereby enabling the supporting rod sections to be connected, e.g., using screws.

In a further embodiment, it is provided that the hinge has a central body on which a pivotable sleeve is mounted, to which the tab is connected. A hinge with bearing capacity is therefore realized in a simple manner, it being possible to achieve axial guidance of the sleeve by the fact that the sleeve is inserted flush in a groove in the central body. In addition to this axial enclosure, the sleeve is also preferably designed to be radially flush with and encompass the central body, and therefore does not project radially.

If the geometry of the outer jacket of the central body with the inserted sleeve corresponds to that of the supporting rod or the supporting rod sections, the hinge is barely noticeable in the supporting rod, in particular between the supporting rod sections. This is the case in particular when the tab is located behind a shutter or a door, as viewed from the outside. To this end, the tab is advantageously displaced on the sleeve relative to the axis by a distance equal to the thickness of a sleeve or shutter.

In a further embodiment it is provided that the central body tapers in the axial direction at both ends in the shape of a truncated cone. With receptacles for the supporting rod sections configured accordingly on the front side, self-centering takes place during assembly, and a large supporting surface is provided for good force transfer via the hinge between the support rod sections.

Advantageously, the central body has a two-component configuration, a first subpiece including an axially extending, central inner thread, and a second subpiece engaging with a plug-like, externally threaded projection in the central inner thread of the first subpiece. As a result of this two-component configuration, the two components can be connected individually with supporting rod sections, and a supporting rod can be created by subsequently screwing the two sub-pieces together. The hinge securely connects two supporting rod sections.

If the supporting rod sections are formed by hollow profiles, the hinge can be advantageously connected with them using two dowel rods inserted in the supporting rod sections. A connection of this type that can be repeatedly disconnected is usually sufficient.

According, it can be provided that the joint is also created using a similar dowel rod, in particular, on a supporting rod section. To this end, the outer dimensions of the central body and the sleeve of the hinge advantageously correspond to those of a joint. It is therefore also preferable for the joint to taper in the axial direction at both ends in the shape of a truncated cone, and for a central, cylindrical section to include a sleeve that has been slid onto it.

To connect a supporting rod to the cylindrical section of the joint, it can also be provided that a shaped part which creates a form-fit transition is located between the joint and the supporting bar. In addition to creating an attractive appearance, this also enables relatively strong forces to be directed along the supporting rod and supporting rod sections into the joints.

A dowel rod is also preferred for connecting the supporting rod sections to the hinge and to the joints, with which two segments – which have rectangular cross-sections and are moveable toward each other – are provided with opposing wedge-shaped surfaces and can be tightened against each other using a screw. The wedge-shaped end of each segment results in an enlarged cross-section across the segments. The wedge effect makes it possible for the segments to apply strong contact pressure against the inner wall of the hollow profile, thereby making it nearly impossible to pull the dowel rod

out of the supporting rod section formed by a hollow profile, or out of the supporting rod.

The present invention is described in greater detail herein below with reference to the drawing, in which exemplary embodiments are depicted schematically. In the drawing:

- 5 Figure 1 Shows an outer view of a joint with supporting rod section and hinge,
- Figure 2 Shows an axial longitudinal section through the hinge,
- Figure 3 Shows a radial longitudinal sectional view along the line III, III in Figure 1,
- Figure 4 Shows a front view of the area indicated by arrow IV in Figure 2,
- Figure 5 Shows an axial longitudinal section through a joint,
- 10 Figure 6 Shows a top view of the connection of the joint to a supporting rod,
- Figure 7 Shows a view of the area indicated by arrow VII in Figure 1, and
- Figure 8 Shows a top view of the area indicated by arrow VIII in Figure 1.

Figure 1 shows – in an approximately half-view, which has a symmetrically matching half on the right-hand side – a supporting structure of a cupboard or shelf system
 15 according to the present invention.

A supporting rod section 2 of a supporting rod 3 is connected horizontally to joint 1. Extending vertically outward therefrom and extending horizontally into the plane of the drawing, two further profiles 4, 5 are connected to joint 1, while an adjustable base 6 is connected to the underside. Refer also to Figure 8, in which outwardly extending profile
 20 4 is not shown.

Supporting rod 3 includes a plurality of supporting rod sections 2, 7 connected by a hinge 8, which is explained in greater detail with reference to Figures 2 through 4.

Hinge 8 is provided with a tab 9 which is capable of pivoting around an axis 10 which, in this case, coincides with the axis of symmetry of supporting rod 3.

By way of tabs 9, connected in particular with a plurality of hinges 8, a shutter 11 can therefore be pivoted around axis 10. Shutter 11 is screwed together with tab 9, which includes two bore holes 12 for this purpose.

Tab 9 is located in a plane which is displaced relative to a parallel plane through axis 10 by a distance equal to the thickness of the material of shutter 11. Refer to Figure 3. To this end, tab 9 is connected to a sleeve 14 via a segment 13, sleeve 14 being rotatably supported on a central body 15 into which sleeve 14 is inserted into a groove 16 in central body 15 in an axially flush manner. Sleeve 14 therefore also encompasses central body 15 in a radially flush manner.

Central body 15 tapers in the axial direction at both ends in the shape of a truncated cone and is composed of two subpieces 17, 18 which are screwed together. A first subpiece 17 includes an axially extending, central inner thread 19 to accommodate the screw. A plug-like, externally threaded projection 20 of second subpiece 18 is screwed into inner thread 19.

Figure 1 also shows that the geometry of the outer jacket of central body 15 with inserted sleeve 14 corresponds to that of supporting bar sections 2, 7. As a result, hinge 8 located between supporting bar sections 2, 7 and inserted into supporting rod 3 is barely noticeable.

The shape and size of central body 15 with inserted sleeve 14 also substantially match that of joint 1.

Joint 1 is attached to profile 4 and supporting rod section 2 via dowel rods 23, 24, and hinge 8 is attached to supporting rod sections 2, 7 via dowel rods 21, 22. Supporting rod sections 2, 7 are formed by hollow profiles.

Hinge 8 includes an axial, central threaded hole 25 to enable attachment of dowel rods 21, 22. When screws 26, 27 are screwed into central threaded hole 25, two segments 28, 29; 30, 31 – which are capable of moving toward each other – of dowel rods 21, 22 move toward each other and, as a result of the adjacent, opposing wedge surfaces of particular segments 28, 29; 30, 31, they become detachably wedged together in the

hollow profile – which is configured accordingly – of supporting rod sections 2, 7.

Similar to hinge 8, joint 1 also tapers in the axial direction at both ends in the shape of a truncated cone, and profiles 4, 5 and supporting rod sections 2, 7 include corresponding recesses on the front.

- 5 Shaped parts 33 through 35, which form form-fit transitions, can also be provided to connect supporting rod sections 2 or profiles 5 to the cylindrical section of joint 1, which also has a slid-on sleeve 32.